Rock Island Arsenal
Shop I
(Building 110)
Rodman Avenue between Fourth Street
and East Avenue
Rock Island
Rock Island County
Illinois

HAER No. IL-20-J

HAER
ILL,
81-ROCIL,
3/110-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D.C. 20013-7127

HAER
ILL,
81-ROCIL,
3/110-

HISTORIC AMERICAN ENGINEERING RECORD

ROCK ISLAND ARSENAL
SHOP I
(Building 110)
HAER No. IL-20J

Location: Rodman Avenue Between Fourth Street and East Avenue,
Rock Island Arsenal,
Rock Island,
Rock Island County, Illinois
UTM: 15.705140.4598910
Quad: Davenport East

Date of Construction: 1876-1882

Present Owner and Occupant: U.S. Army

Present Use: Administrative offices

Significance: After taking command of Rock Island Arsenal in 1865, General Thomas Jefferson Rodman devised a master plan for the installation calling for the construction of ten large, Greek Revival, manufacturing shops, five on each side of the island's major east-west thoroughfare. Under construction from 1878 to 1883, Shop I was the eighth to be completed. With its companion facilities completed under the Rodman plan, Shop I forms a cohesive architectural statement, which, in terms of both scale and style, has no counterpart among government installations in the Midwest.

In addition to their architectural importance, the Rodman shop buildings are the administrative and technological core of Rock Island Arsenal, one of only two "old-line," nineteenth-century arseanls still in operation for munitions production. The buildings are vital for understanding the history of American ordnance development and manufacture from the Spanish American to the present. Shop I is part of the Rock Island Arsenal National Register Historic District.

Historian: Jeffrey A. Hess, February 1985

Architectural Historian: David Arbogast, February 1985

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: According to Colonel Daniel Webster Flagler, who succeeded General Thomas Jefferson Rodman as the arsenal's commandant in 1871, the building site was selected by Rodman in February 1866 (Flagler, p. 118). Excavation commenced in July 1878, and the foundations and basement level were completed by June, 1879 ("Report, 1879," pp. 201-203). By June 1882, the stonework for the walls was completed, and the building was finished in 1883 ("Report, 1882," p. 79; "Report, 1883," p. 413). A datestone above the central entrance of the north facade bears the inscription, "1878."

2. Architect: Although Shop I was designed and built under the supervision of Colonel Daniel Webster Flagler, the building was closely patterned after Shops B and C (see HAER Nos. IL-20A, IL-20G), which were designed by General Thomas Jefferson Rodman (Flagler, p. 261).

Born in Salem, Indiana in 1815, Rodman graduated from West Point in 1841 and was assigned to Allegheney Arsenal in Pittsburgh as an officer of the Ordnance Department. During the next two decades, he developed techniques for hollow casting cannon and for producing perforated propellant, which revolutionized the manufacture and use of artillery (Zabecki, pp. 55-56; Flagler, pp. 262-266).

As commandant of Watertown Arsenal near Boston from 1859 to 1865, Rodman was responsible for designing a machine shop for the installation, which was a simplified, brick version of the Greek Revival stone manufacturing shops he subsequently planned for Rock Island Arsenal (Baylies and Bahr, p. 37). Rodman assumed command of Rock Island Arsenal in 1865; he died of illness at the installation in June 1871 (Flagler, pp. 116, 261).

3. Original and subsequent owners: U.S. Army.

4. Builder, contractor, suppliers:

"Much of the manufacturing effort at the arsenal before the Spanish-American War concentrated on construction of the buildings. The rolling mill [in Shop F (see HAER No. IL-20C)] produced most of the roof trusses. . . . The foundry [in Shop E (see HAER No. IL-20H)] and machine shop [in Shop C (see HAER No.

1L-20G)] made much of the machinery and building hardware such as the locks and stairways. The carpenter shop [in Shop C] made the window frames. Contract labor did some of the work while civilian employees and soldiers did other portions of the job" (Bouilly, p. 125; see also "Report, 1882," pp. 78-79).

The shop was built of Anamosa limestone from Jones County, lowa; the supplier, on a contract basis, was J.A. Green ("Report, 1879," p. 202; "Report, 1883," p. 413). Green had previosly furnished stone for the Post Building (see HABS No. 1L-1001B) and the Subaltern Officer's Quarters (see HABS No. 1L-1001F).

5. Original plans and construction: On February 7, 1866, Rodman submitted to the War Department a schematic site plan of the arsenal, proposing the construction of ten manufacturing shops, five on each side of the arsenal's main east-west thoroughfare (later named Rodman Avenue). The plan was published in 1877 (Flagler, Plate I). It delineates the ten buildings, including Shop G, as U-shaped structures with a crossbar connecting the legs of the "U" at midpoint. According to Flagler, the configuration of the buildings was almost immediately changed. "To add strength to the walls [and] beauty to the architecture," two porticos were added to the front and to each of the sides of the buildings. Also, the crossbar between the legs of the "U" was removed "to leave the courtyard clear for teaming purposes" (Flagler, p. 123). The revised plan was published in 1877 (Flagler, Figure 1, inset on Plate I). The Rock lsland Arsenal Engineering Plans and Services Division has a microfiche copy of an 1879 floor plan for Shop 1, signed by "Col. Flagler," that is identical to the schematic plan published in 1877. No other original plans or elevations have been located.

Shop I was built with "continuous" skylights "5 feet wide around the whole building on one side of the peak" ("Report, 1881," p. 58; "Report, 1885," p. 619). This system had first been used in Shop G (see HAER No. IL-20I), and it provided better ventilation and light than the small, scattered skylights used in previous shop construction. According to Flagler, Shop 1 was built for a total cost of $328,500, which was "less than one-half the cost of the first shops that were built" ("Report, 1883," p. 413).

The earliest known view is a 1944 photograph in the picture collection of the Rock Island Arsenal Historical Office (see HAER Photo No. IL-20J-5). It confirms Flagler's general description of original construction and the details of the 1877 plan. The building's present configuration conforms to the 1877 plan, with

three exceptions. First, a one-bay, two-story, brick addition has been erected at the southeast corner of the west wing and at the southwest corner of the east wing. Second, a three-story, stone-veneer building of identical Greek Revival architecture connects the pavilions on Shop I's west facade to Shop G. Third, a small, shed-roofed, one-story, one-room addition has been added to the north end of the west courtyard elevation.

6. Alterations and additions: At undetermined dates, the original slate roofing was replaced by composition roofing; the original stone entrance steps were replaced by concrete steps; and a small, shed-roofed, one-story, one-room addition was added to the north end of the west courtyard elevation.

   Before 1907, a one-bay, two-story, brick addition for toilet facilities was erected at the southeast corner of the west wing and at the southwest corner of the east wing. These additions appear on microfiche copies of floor plans, dated December 7, 1907, in the Rock Island Arsenal Engineering Plans and Services Division.

   In 1917-1918, the facades of the pavilions on the building's west elevation were demolished. The original stonework from the demolished sections was reused in constructing a three-story, stone-veneered, Greek Revival structure connecting the remaining portions of the pavilions to Shop G (see HAER No. IL-20I). The new building, designated as "G-I Connection," was designed and built by Stone and Webster Company of Boston; it was completed in June 1918 (Completion Report,, p. 3; see HAER No. IL-20T).

B. Historical Context:

After assuming command of Rock Island Arsenal in August 1865, General Thomas Jefferson Rodman devised a master construction plan for the installation, which he submitted to the War Department on February 7, 1866. In its general outline, Rodman's plan called for the construction of ten large, stone, manufacturing shops, five on each side of the arsenal's main east-west thoroughfare (later named Rodman Avenune). The establishments on the south side of the avenue were called "arsenal shops," which meant they were to be devoted to the manufacture of general ordnance items. Those on the north side were called "armory shops," because they were intended for small arms production. All ten shops were designed in a Greek Revival style, which Rodman had previously used in designing a machine shop at Watertown Arsenal near Boston. Although none of the shops was completed before Rodman died of illness in June 1871, all ten were eventually finished by his nineteenth-century successors (Flagler, p.

118; Nothstein and Stephens, pp. 153-157).

Situated on the eastern end of "arsenal row," Shop I was the eighth shop to be completed. Excavation began in 1878, and construction concluded in 1883. Originally designated as "a wood-working and leather-working shop," Shop I served as a storehouse until 1898 ("Report, 1881," p. 59; "Artillery Vehicle Department," vol. 3, n.p.). In that year, a small harness shop was installed on the building's second floor, supplementing a much larger operation already established in Shop C ("History of Rock Island Arsenal," p. 30; see also HAER No. 1L-20G). In 1901, the Shop C harness operation was completely transferred to Shop I, which was equipped with new electric motors and power take-off shafts to drive the machinery ("History of Rock Island Arsenal," p. 30). The following description was published in 1905:

> "The Harness Shop . . . occupies the whole of shop I . . . .The first floor in the west wing is known as the cloth department, which makes up haversacks, pouches for 'first-aid' packets, breech covers for heavy guns, nose bags, and an endless variety of things generally, most of which are handled on sewing machines. On the same floor, in the front section of the building, is located the hand cutting departmnt for leather for harnesses, saddles, etc.; and in the east wing is the press department [see HAER Photo No. IL-20J-6], where all heavy pieces and awkward or irregular shapes are cut from leather stock by means of dies and presses. Straps, etc., are punched here; and molded leather shapes formed under presses which use brass dies as other metal discolors the leather which has to be thoroughly moistened preliminary to shaping. At the rear of the room is a brush-making plant.
>
> "The great part of the floor above is occupied by harness makers working at benches . . . and making artillery harness, bridles, halters, saddles, saddle bags, etc. Leather leggins, rifle scabbards, pack outfits are also made here, stirrups are covered with leather and various other jobs of an interesting nature performed. The upper floor in the building is utilized as a storeroom for much of ths finished leather product. Over 600 workmen are employed in the harness shop" (Stanley, p. 210).

In 1905, a portion of the building's second floor was devoted to the assembling of artillery carriages ("History Artillery Vehicle Department," vol. 1, p. 1). During the next ten years, this operation expanded to such an extent that, in 1914, the harness shop was moved out of the building, and Shop 1 was entirely converted into a field artillery assembling plant for the duration of World War I

("Report, 1914," p. 40, "History Artillery Vehicle Department," vol. 3, n.p.; see HAER Photo No. IL-20J-7). This operation required only a minimal amount of power machinery -- primarily boring mills, radial drills, reaming machines, and grinding machines ("General Course of Instruction," pp. 77-82). In 1921, all manufacturing closed down and the building remained inactive until 1940, when it was reopened with new and reconditioned machinery to assemble artillery carriages and recoil mechanisms ("History Artillery Vehicle Department," vol. 3, n.p.; vol. 7 pp. 2-3). At the conclusion of World War II, Shop I was converted into a storehouse, and so remained until 1952, when it was reactivated "for the renovation, repacking and packaging of Field Service parts and material" ("History Manufacturing Department," vol. 13, n.p.) After the Korean War, the building was remodeled into administrative offices. Shop I has been designated as "Building 110" at least since World War II (see HAER Photo No. IL-20J-5; for additional documentation, see HAER No. IL-20).

Prepared by: Jeffrey A. Hess
MacDonald and Mack Partnership
February 1985

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: The building is a massive, late Greek Revival style, U-plan, limestone structure. It is two-and-one-half stories above a basement, with a gabled roof sheltering an attic. It forms part of a symmetrical set of five buildings along the south side of Rodman Avenue, which is mirrored by a matching set on the north side.

2. Condition of fabric: The building is well-maintained and is in good condition.

B. Description of Exterior:

1. Overall dimensions: The main (north) block of the building (HAER Photo No. IL-20J-1) measures 210' x 60' (19 bays on the north elevation and 9 bays on the south elevation). Two wings (HAER Photo Nos. IL-20J-1, IL-20J-2 and IL-20B-3), each measuring 240' (28 bays on their exterior elevations and 21 bays on their courtyard elevations) x 60' (5 bays on their south elevations) stretch south from the east and west ends of the main block. Near each end of the outer, long elevations of the wings are projecting pavilions measuring 60' (5 bays) and extending 15' (1 bay) from the wing elevations. The building is two-and-one-half stories tall with a full basement and attic. At the south ends of the

courtyard elevations of the wings are 1 bay x 1 bay, two-story additions (HAER Photo No. IL-20J-3) with basements but no attics.

2. Foundations: Coursed, rock-faced ashlar limestone measuring 3'-0" thick below a dressed ashlar limestone water table. Tbe addition foundations are reinforced concrete.

3. Walls: Coursed, rock-faced ashlar limestone (HAER Photo Nos. IL-20J-1, IL-20J-2, IL-20J-3, and IL-20J-4) decreasing in thickness by 6" with each story. Colossal rock-faced ashlar limestone pilaaters (HAER Photo Nos. IL-20J-1, IL-20J-2, IL-20J-3, and IL-20J-4) rising from the water table to the entablature divide the elevations into a regular bay system. The dressed limestone entablature (HAER Photo Nos. IL-2oJ-1, IL-20J-2, and IL-20J-3) carries a projecting dressed limestone cornice. The pedimented gable enda (HAER Photo Nos. IL-20J-1 and IL-20J-2) are rock-faced ashlar limestone with dressed limestone cornices. There is a carved limestone block above the central entrance of the north elevation bearing the date 1878. The addition walls (HAER Photo No. IL-20J-3) are tan brick blending with the adjacent limestone walls and have brick pilasters and dressed limestone trim to a flat roofline level with the limestone entablature.

4. Structural systems: Limestone bearing wall. Coursed, rock-faced limestone piers 20' on-center in the basement support fluted, cast-iron, Doric columns on the first and second floors. First, second, and attic floor systems are wrought-iron stringers and joists with brick vaulting between. The roof system is iron Fink trusses. The additions have brick bearing walls and poured concrete floor and roof systems.

5. Porches: Porches (HAER Photo Nos. IL-20J-1 and IL-20J-2) are located at the center bays of tbe pavilions (except abutting Building 109), the south ends of the wings, the third bays from each end of the north elevation of the main block, and the center of the main block. Typical porches consist of poured concrete steps on rock-faced ashlar limestone base walls. The east pavilion porches have grsnite steps. The east face of the northeast pavilion porch contains a rock-faced limestone arch with voussoirs, keystone, jambs, and sill block. It is filled witb rock-faced ashlar limestone. The east face of the southeast pavilion porcb contains a aimilar, but longer arch which, apparently, once contained a doorway, but is now filled with concrete block.

6. Light wells: Across the north elevation there is a narrow window well with rock-faced asblar limestone walls to grade and a black pipe railing above grade.

7. Chimneys: Eight, round, sheet-metal flues (HAER Photo Nos. IL-20J-1 and IL-20J-2) emanate from as many east elevation hasement and first-floor windows, rising to ahove the eaves. Five similar flues (HAER Photo No. IL-20J-3) emanate from similar courtyard wing and addition windows.

8. Openings:

   a. Doorwaya: Principal doorwaya (HAER Photo Nos. IL-20J-1, IL-20J-2, IL-20J-3, and IL-20J-4) are centered in the northeast, southwest, and southeast pavilions, the wing ends, the third bays from each end of the north elevation, and the first and sixteenth hays from the north end of the courtyard elevations of the wings. Those at the wing ends and the courtyard are at the hasement level. Each has a rock-faced limestone segmental-arched head with a rock-faced keystone, and rock-faced limestone jambs with large, semi-circular, hase blocks (now removed from most first-floor doorways) projecting into the doorway. Most of the original limestone sill hlocks have heen replaced with poured concrete sills. The north elevation and east pavilion doorways contain pairs of modern slah doora with upper glass psnels and transoms and sidelights. The soutbwest pavilion doorway contains a set of three original two-light over one panel wood doors with transom. Below it, at tbe basement level, is a small doorway containing a modern slab door with upper glass panel. Both wing end doorwaya (HAER Photo No. IL-20J-4) contain modern overhead doors. The west wing end doorway (HAER Photo No. IL-20J-4) has a standard principal doorway arch opening above it st the first floor level, containing a set of three original two-light over single wood panel doors and trsnsom. The aouth doorway of the east courtyard elevation has heen filled with concrete hlock. The north doorway of the same elevation has a pair of modern alab doors with upper glass panels. The south doorway of the west courtyard elevation has been filled with hrick. The north doorway of the same elevation contains a modern overhead door. Narrower doorways are located in the center of the north and south (basement level) elevations of the main block. The north opening is identical to those of the principal doorways, differing only in width. It contains a modern slab door with upper glass panel and transoms and sidelights aimilar to those of the nearby doorways. The south opening has ashlar limestone jamhs, a lintel formed hy tbe water tahle, and a dressed limestone sill hlock. It is filled with hrick. In the fifth and seventh hays from the north of the courtyard elevations of the wings are doorways matching the width of standard window openings. They have ashlar limestone jsmbs, lintels formed by the water tahle, and dressed limestone sill blocks, similar to the adjacent window openings, differing

only in length. All four of these doorways are filled with brick. North of the northeast pavilion porch at the basement levela window opening has heen converted to contain a five-panel wood door. The window openings directly east of each south end principal doorway have been converted to contain single modern slab doors with upper two-light glass panels.

b. Windows: Typical hasement, first-, and second-floor window openings (HAER Photo Nos. IL-20J-1, IL-20J-2, and IL-20J-3) are filled with glass block over modern, two-light, aluminum, hopper sash, and have rock-faced limestone jambs, cut limestone sills and flat lintels. The basement window openings (HAER Photo Nos. IL-20J-1, IL-20J-2, and IL-20J-3) have lintels formed hy the water table. Paired window openings (HAER Photo Nos. IL-20J-1, IL-20J-2, and IL-20J-3) above the primary doorways have segmental-arched, rock-faced limestone voussoirs and keystones. Above the narrow, center doorways (HAER Photo No. IL-20J-3) on the south and north main block elevations are similar window openings containing glass hlock and aluminum sash. Attic window openings (HAER Photo Nos. IL-20J-1, IL-20J-2, and IL-20J-3) contain small, single-light, pivoting, wood sash and are typically arranged in pairs of small openings in the building entablature with sets of four centered in the gahle ends and sets of three in the centers of the south and north main hlock elevations. These window openings have rock-faced jambs and sills and lintels formed by the entablature and frieze. The gable ends (HAER Photo Nos. IL-20J-1 and IL-20J-2) contain paired window openings with rock-faced limestone jambs, segmental-arched, rock-faced limestone arches and keystones and dressed limestone sills. Some hasement window openings (HAER Photo Nos. IL-20J-2 and IL-20J-3) retain six-over-six, double-hung, wood sash, dating from the original construction. The addition window openings (HAER Photo No. IL-20J-3) have hrick jambs, dressed limestone lintel and sill blocks and are filled with typical glass block and aluminum hopper sash at their basement, first, and second floor levels. All window openings of the wings facing the two additions have been filled with brick. All surviving wood window sash are painted white.

c. Other openings: Near the north ends of the east and west elevations are single, semi-circular arch openings with rock-faced limestone voussoirs, keystones, jambs, and sill blocks. The west opening is filled with the concrete steam tunnel and the east opening is filled with rock-faced ashlar limestone.

9. Roof:

a. Shape, covering: The roof (HAER Photo Nos. IL-20J-1, IL-20J-2,

and IL-20J-3) is a cross-gable form covered with asphalt shingles.

b. Cornice, eaves: The cornice and eaves (HAER Pboto Nos. IL-20J-1, IL-20J-2, and IL-20J-3) are dressed limestone in a Classical style. The interior metal gutter system is tied to exterior metal leaders which lead to an underground drainage system.

10. Ancillary buildings: Near the north end of the west courtyard elevation a small, prefabricated, shed-roofed, one-story, one-room addition has been attached to the wall.

C. Description of Interior:

1. Floor plsns: Tbe building originally contained no interior partitions in keeping with its function as an open shop. Following its conversion to offices after World War II, partitions were added, as needed. Most interior partitions date from the past decade. A freight elevator is located at the intersection of the west wing with the main block. Modern restrooms are typically located in the pavilions of the basement, first, and second floors, although the brick additions were initially constructed to house restrooms, as well.

a. Basement: The basement is an open-plan area with some enclosed rooms in the main block bousing quality assurance laboratories.

b. First floor: The first floor is has a center-hall plan flanked by offices.

c. Second floor: The second floor is basically an open-plan area with a number of enclosed offices.

d. Attic: The attic is an open-plan storage area.

2. Stairways: There are four, U-plan, stairways with intermediate landings rising from tbe basement to the attic. Tbese are located in each of the pavilions. Originally open, they are now enclosed. They are cast iron in curvilinear Italianate style forms with open risers and open, decorative railing supports and no newel posts. The landinga are covered with concrete. The handrails are dark molded wood with a varnish finish to whicb bave been added modern brushed aluminum handrails to meet modern height requirements for safety. The bottom fligbts of stairs in the basement are limestone blocks.

3. Flooring: Basement flooring is poured concrete covered with lino-

leum tile. The first floor has poured concrete flooring covered with linoleum tile. The second floor bas varnished wood flooring, as does the attic. Along the center of the attic floor is a aet of steel plates forming a track.

4. Wall and ceiling finishes: Outer basement walls and interior piers are painted, rock-faced, ashlar limestone and painted brick in the additions. Interior partition walls are painted concrete block and demountable partitions. The ceiling is exposed and painted iron joists and atringers snd brick vaulting.

   Outer first- and second-floor walla are painted, rock-faced, limestone and painted brick in tbe additions. The cast-iron columns are exposed and painted. Interior partitions are painted concrete block and demountable partitions. In addition, tbe second floor has painted gypsum board partitions. The first-floor ceiling is suspended, acoustical tile in some areas and painted, iron joists and stringers witb brick vaulting in others. Tbe second-floor ceiling is suspended, acoustical tile.

   Tbe outer sttic walls are unpainted, rock-faced, aahlar limestone. Interior psrtitions are painted concrete block, unpainted gypsum board, wire cage, and open vertics1 wood slats. Tbe ceiling is the wood decking and rafters and purlins of the roof.

5. Openings:

   a. Doorways and doors: No origins1 doorways aurvive. Thus, a11 doorways are of relatively recent vintage appropriate to their respective partitions.

   b. Windows: Window openings lack casings and are formed by the adjacent limestone.

6. Hardware: Original hardware associated with the two surviving, first-floor doors includes beavy, cast-brass, plate hinges and decorative pulls incorporating "RIA". Surviving original window bardware includes aash corda, pulleys, weights, and ornate lifts associated with the original basement window sash.

7. Mechanicsl equipment:

   a. Heating, air conditioning, ventilation: The building is heated by ateam radiators from a central heating plant (Building 227). Tbere is no air conditioning. Ventilation is provided by opening the window sash.

   b. Ligbting: Artificial illumination is by means of incandescent electrical fixtures in the attic and fluorescent fixtures in

the basement, first, and second floors. No evidence remains of original artificial lighting systems.

c. Plumbing: No original plumbing fixtures survive.

d. Elevators: Of the two original freight elevators, only one survives, and that in a modernized form.

D. Site:

1. General setting and orientation: The building anchors the southeast corner of the set of ten stone shops. It is on the southeast corner of Rodman Avenue, the arsenal's principal street, and East Avenue. West of the building is Building 108, an administration building. Connecting the two buildings is Building 109, another administration building. The interior courtyard is paved and stretches south to South Avenue. The relatively level site slopes gently to the south.

Prepared by: David Arbogast
Architectural Conservator
February 1985

PART III. SOURCES OF INFORMATION

A. Original Architectural Drawings:

The Rock Island Arsenal Engineering Plans and Services Division has microfiche copies of the following floor plans:

"[Floor Plan for Shop] I," September 29, 1879, microfiche no. R20000545. Shows original building configuration; identical to plan published in 1877 for earlier arsenal shops (Flagler, Figure 1, inset on Plate I).

"Proposed Erecting for Siege Material," December 7, 1907, microfiche nos. R20000556-R20000557. Shows two-story brick additions in place.

B. Early Views:

The Rock Island Arsenal Historical Office has the following photographs documenting original construction and manufacturing operations:

Photograph of the south and east facades, captioned "77 / Looking northwest at Shop 'I,' Building #110 / 1 November 1944" (see HAER Photo No. IL-20J-5).

Photograph of power presses on the first floor of the harness shop, originally published in 1905 (Stanley, Fig. 26, p. 212; see HAER Photo No. IL-20J-6).

Photograph of assembling operation for 75mm gun carriages during World War I, captioned "156-30783 8-23-18 / Shop Interiors and Machinery / View in Shop 'I,' showing Trails being assembled for 75 M. M. Gun" (see HAER Photo No. IL-20J-7).

C. Bibliography:

1. Primary and unpublished sources:

Baylies, Libby and Bahr, Betsy. "Historic American Buildings Survey of the United States Materials and Mechanics Research Center, Watertown, Massachusetts." 1982. HAER No. MA-20, HABS/HAER Collection, Prints and Photographs Division, Library of Congress. Discusses Rodman's architectural work at Watertown Arsenal.

Hess, Jeffrey A., and Mack, Robert C. "Historic Properties Report Rock Island Arsenal, Rock Island, Illinois". Prepared by MacDonald and Mack Partnership, and Building Technology Incorporated for the Historic American Buildings Survey/Historic American Engineering Record, National Park Service, U.S. Department of the Interior, 1985. The report, with accompanying inventory cards, is filed as field records in the Prints and Photographs Division, Library of Congress, under HAER No. IL-20.

"History Artillery Vehicle Department, 1939-1942," vols. 1, 3. Rock Island Arsenal Historical Office. Briefly describes building's manufacturing program.

"History Manufacturing Department Rock Island Arsenal, 1946," vol. 7. Rock Island Arsenal Historical Office. Describes building's use from 1921 to 1946.

"History Manufacturing Department Rock Island Arsenal, 1951-1952" vol. 13. Rock Island Arsenal Historical Office. Notes reopening of building as packaging plant.

"History of Rock Island Arsenal Called for by O.O. 25301-D-195," N.d. Rock Island Arsenal Historical Office. Discusses harness shop operation.

Real Property Cards, Engineering Plans and Services Division, Rock Island Arsenal. Briefly describes building's structural characteristics and provides sketchy history of maintenance operations.

2. Secondary and published sources:

Bouilly, Robert. "Arsenal Island." Joined by a River: Quad Cities, ed. Frederick I. anderson. N. pl.: Lee Enterprises, Incorporated, 1982. Excellent historical analysis of the arsenal's development to about 1910, written by a historian in the Rock Island Arsenal Historical Office.

Completion Report Covering All Construction Projects Accomplished Under Supervision of the Construction Division, U.S. Army at Rock Island Arsenal. Rock Island Arsenal, 1919. Rock Island Arsenal Historical Office. Discusses planning and construction of connecting building between Shops G and I.

Flagler, D[aniel] W[ebster]. A History of the Rock Island Arsenal from Its Establishment in 1863 to December 1876. Washington, D.C.: Government Printing Office, 1877. Most detailed discussion of general site planning for arsenal's shops.

Nothstein, Ira O. and Stephens, Clifford W. A History of Rock Island Arsenal from Earliest Times to 1954. Rock Island: U.S. Army, Rock Island Arsenal, 1965. 3 vols. Rock Island Arsenal. The best account of the arsenal's general operations and construction.

"Report of the Chief of Ordnance, 1879, 1881, 1882, 1883, 1885" House Documents, vols. 1907, 2014, 2095, 2186, 2374. Washington, D.C.: Government Printing Office, 1879, 1881, 1882, 1883, 1885. Progress reports and descriptions of construction.

Stanley, F. A. "The United States Arsenal at Rock Island -- III." American Machinist (February 16, 1905), 208-212. Excellent illustrated description of harness shop layout and technology.

Zabecki, David T. "Father of the Rock Island Arsenal." Field Artillery Journal, 49 (January / February, 1951), 55-56. Discusses Rodman's pioneering work in cannon and propellant design.

D. Likely Sources Not Yet Investigated:

Record Group 156 at the National Archives contains correspondence on the construction and operation of Rock Island Arsenal from 1871 to 1903. This material is also available on 216 reels of microfilm at the Browning Museum, Rock Island Arsenal.

PART IV. PROJECT INFORMATION

This project was part of a program initiated through a memorandum of agreement between the National Park Service and the U.S. Department of the Army. Stanley J. Fried, Chief, Real Estate Branch of Heaquarters DARCOM, and Dr. Robert J. Kapsch, Chief of the Historic American Buildings Survey/Historic American Engineering Record, were program directors. Sally Kress Tompkins of HABS/HAER was program manager, and Robie S. Lange of HABS/HAER was project manager. Building Technology Incorporated, Silver Spring, Maryland, under the direction of William A. Brenner, acted as primary contractor, and MacDonald and Mack Partnership, Minneapolis, was a major subcontractor. The project included a survey of historic properties at Rock Island Arsenal, as well as preparation of an historic properties report and HABS/HAER documentation for 38 buildings. The survey, report, and documentation were completed by Jeffrey A. Hess, historian, Minneapolis; Barbara E. Hightower, historian, Minneapolis; David Arbogast, architectural historian, Iowa City, Iowa; and Robert C. Mack, architect, Minneapolis. The photographs were taken by Robert A. Ryan, J Ceronie, and Bruce A. Harms of Dennett, Muessig, Ryan, and Associates, Ltd., Iowa City, Iowa. Drawings were produced by John Palmer Low, Minneapolis.